

REMARKS

The last Office Action dated 10/28/2004 has been carefully considered.

The Applicant, through this representative, concluded a telephone interview with the Examiner on 12/18/2004. The Applicant proffered additional claim limitations and sought to clarify if certain assertions of the Examiner were based on personal knowledge. Although little concrete progress was reached in the interview, the Applicant appreciates the Examiner's guidance in reviewing potential modifications to the independent claims to obviate the earlier grounds for rejections, and is submitting these comments as a summary of the interview with the Examiner.

In response to the Examiners objections on the mis-numbering of the claims, the applicant has now cancelled Claim 11, and properly renumbered previously presented claims 12-31.

The currently pending claims comprise currently amended independent claims 12, 19 and 27, as well as the currently amended dependent claims, which are now 13-18, 20 - 26 and 28-31. The dependent claims are amended as to the claim dependency to properly reflect the revised numbering, hence all claims are now listed as being in the condition of "currently amended".

Although the applicant is hopeful of the allowance of all the new claims, based on the Examiner's positive impression of the amendments discussed, the applicant wishes to make certain matters of record, should the Examiner apply the same or similar grounds for rejection of the new claims.

In the Applicant's previous response to the office action dated 4/22/2004, the Applicant pointed out that in the office action of 2/6/2003 the Examiner states that "It would have been obvious to one of ordinary skill in the art to modify the ridge top to groove bottom distance of Cheng as taught by Welhouse, in order to improve the heat transfer and drainage performance of the cooking pan".

The Applicant contended that the suggestion relating to drainage performance and

heat transfer in Chen and Welhouse does not teach the applicants modifications and claim limitation. Thus the Applicant requested further evidence or an affidavit under 37 CFR 1.104(d)(2) wherein the Examiner states such facts are within his personal knowledge, and any basis therefore supporting the allegation. No such affidavit has been forth coming.

Not notwithstanding the fact that the applicant believes the previous grounds of rejection are untenable without an Affadavit that can be challenged on it's factual basis, and was hence improper ab initio, the Applicant will now point out with specificity how such a conclusion is factually untenable.

Welhouse teaches at column1, line 17 that "Textured cooking surfaces have also been provided for the drainage of fat and grease away from the food to lower the fat and cholesterol content of the cooked food."

Modifying the texture of a cooking surface for draining fat can only be interpreted to suggest that greater depth or distance between the high spots, that support the food, and the low spots, that define drainage channels for liquid grease and fat. Hence, any modification of depth according to Welhouse would be a greater depth to increase the drainage capacity of such channels.

The Examiner's assertion that Welhouse discloses a depth of .13 to .31 mm (.005 to .012 inches) is not a reasonable interpretation, as Welhouse in FIG. 1 illustrates a texture having three distinct heights. The drainage channels are defined by the difference between the highest and lowest points. Notwithstanding the misleading description at column 4, line 63 to column 5 line 2, the Applicant believes the only reasonable teaching of Welhouse is that drainage channels should have a depth of 0.012" (0.38 mm). Doyle teaches at column 4, lines 11 to 14: "*a height 60 of typical raised dot 46 above a flat portion or valley 62 was set at about 0.19 mm in that working example, with the top of the raised dot being somewhat flat.*"

The Applicant in claims 12 defines the invention as having a depth 0.05 mm to 0.15 mm. The applicant in fact claims a lower depth variation than the dots of Doyle (.19

mm) as well as below the depth of the deepest undulating channels of Welhouse (.31mm).

Both Welhouse and Doyle provide a pattern of high and low regions that allow for drainage of fat, as the low regions extend from the center to the edge of the cooking pan. However, the Cheng reference teaches concentric grooves that do not extend to the edge of the pan, and would hence not drain fat away from the foodstuffs being cooked thereon. Accordingly, any suggestion to utilize the concentric ring pattern of the Cheng reference with the channels thickness or spacing taught in Welhouse and Doyle to better drain away fat is thus inoperable, as the concentric rings would retain and not drain away fat. Hence, there is not a sufficient motivation to combine the teachings of either Doyle or Welhouse with Chang. When a reference teaches away from the combination with another reference or makes the object of the other reference inoperable, the references may not be combined to make a *prima facie* case of obviousness. *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 45 USPQ2d 1977, 1984 (Fed. Cir. 1998), *McGinley v. Franklin Sports Inc.*, 262 F. 3d 1339, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001), *In re Gurley*, 27 F. 3d 551, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994.)

Likewise, in the claimed invention, the key limitation in claim 12 of “regular pattern of concentric corrugations in the form of ridges and grooves there between having a shallow, curved profile free of sharp edges” would not result in increased drainage of fat, as concentric grooves would not permit the drainage of fat to the sides of the pan away from the food, but retains the fat within the grooves. Thus it cannot be realistically said that the deviations from the prior art are in any way suggested by the alleged motivation of increased drainage of fat, as such modification would clearly be in the opposite direction of the claimed invention. Further the modifications from the prior art to achieve the claimed invention are to improve the performance and lifetime of a ceramic filled non-stick fluorocarbon coating.

Further, neither the Welhouse nor Doyle reference suggests modifying the prior art in the manner claimed by the Applicant to improve heat transfer to the food. Doyle states in column 5, lines 54-60: “*For example, in a case where the user is preparing an*

omelet, the user first places frying pan 10 on a conventional heating element, such as the gas burner of a stove. In order to obtain the same cooking effect of the omelet, the temperature of the heating element may be reduced, owing to the more efficient heat transfer from cooking region 30 to the omelet owing to the configuration and spacing of the raised dots in dot pattern 14 and the greater total surface area of cooking region 30.”

Doyle's example of cooking an omelet does not teach or suggest the claim limitations of the Applicant or the combinations with the teaching of the Cheng reference. The benefit of increased surface area from the dimpled surface, or any other textured surface, only applies because the egg mixture used to form an omelet is a liquid that conform to the cooking surface, and thus all of the extra area gained by the dimples is in contact with the now conforming liquid egg mixture that forms the omelet.

In contrast, the majority of foodstuffs intended to be cooked would not benefit from increased area, as heat transfer to such non conforming foodstuffs would clearly be poorer as the food pieces would bridge the gaps formed by valleys and would indeed make contact with less area than the original or a flat cooking surface. Thus, the larger area of the foodstuffs not in direct contact with the cooking surface would have to depend on the radiation of heat through an air gap rather than the direct conduction of heat from the pan to the food. In fact, from such first principles of heat transfer, following the purported suggestion of Welhouse to improve fat drainage, by either deeper or wider channels only creates further distance between the majority of the heated surface and the food supported over the channels heat transfer is indeed worse.

Clearly, the suggestion by the Examiner that the Applicant's modifications were made according to the prior art to improve heat transfer and drainage is without merit as the scientific principles in fact teach opposite modifications of both the depth and spacing between grooves, and teach away from concentric grooves. When a reference teaches away from the combination with another reference or makes the object of the other reference inoperable, the references may not be combined to make a prima facie case of obviousness. *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 45 USPQ2d 1977, 1984 (Fed. Cir. 1998), *McGinley v. Franklin Sports Inc.*, 262 F. 3d 1339,

60 USPQ2d 1001, 1010 (Fed. Circ. 2001, *In re Gurley*, 27 F. 3d 551, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994.)

In the most recent office action, the Examiner rejected claims 12-17, 19-21, 23-25 and 27-31 as being unpatentable over Cheng in view of Welhouse. Again, the Applicant asserts the above contention that the Examiner has failed to make establish a *prima facie* case of obviousness, as there is no motivation to combine the Cheng and Welhouse references.

Even if the references are combined they do not teach all the claimed limitations. Specifically, in Claim 14 the claimed range for the vertical distance of ridge top to groove bottom of 2.3 to 2.8 mm is not taught. The Examiner stated that “one skilled in the art would expect that the same properties and results from the 2 mm disclosed in Cheng and the 2.3 to 2.8 mm claimed range”, merely based on the statement in Cheng that the spacing can be “no more than about 2 mm”, citing *Titanium Metals Corp. of America vs. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Circ 1985). However, the value 2.3 is 15% greater than 2.0. The Examiner’s assertion that one skilled in the art would expect increasing the pitch by 15% to result in the same properties, appears to rely in fact in reliance on personal knowledge. Thus, the Applicant requests further evidence or an affidavit under 37 CFR 1.104(d) (2) wherein the Examiner states such facts are within his personal knowledge, and any basis therefore supporting the allegation.

Further, taking the teachings of Cheng as a whole, the pitch spacing (in Claim 14, column 4, line 67) of less than about 2 mm”, does not teach or suggest the applicants invention, as specification itself would suggest that increasing the spacing beyond 1 mm would in fact lead to a deterioration of performance. Here the applicant has discovered improvements outside of the claimed range in Cheng. Under *In re Geisler*, 116 F. 3d 1465, 43 USPQ 1362, 1365 (Fed. Circ. 1997) it is established law that the discovery of improved properties even within a previously disclosed range, or a reference that teaches away from a particular range, overcomes even a *prima facie* case of obviousness. The Applicant asserts that the Cheng reference teaches away from the invention, as it would lead one to not increase the spacing by 15% from that of the claimed range. Further,

Claim 12 includes further limitations of “ridges and grooves there between having a shallow, curved profile free of sharp edges”, which also was necessary to obtain the superior performance and durability of a coating thereon having a fluoropolymer with ceramic filler, that latter and amended limitation not being disclosed in the prior art.

The Examiner rejected claims 16 and 24 asserting that the method of making the article of cookware was not germane to patentability, and would be given no weight in considering patentability. The Applicant believes that the rejection is not tenable, as it ignores the long standing and recognized status of product by process claims *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F. 2d 834, 23 USPQ2d 1481,1490 (Fed. Circ 1992) Accordingly, patentable weight must be given to each and every limitation of the claims 16 and 24.

In addition, the Examiner rejected claims 15 and 23 stating that the claimed radius of curvature of “about 4mm” is accomplished by the Combination of Welhouse and Cheng. The Examiner further states, “with the ranges being met the radius of curvature could only be in the about 4 mm range”. Neither claim 15 or 23 recites how the pan or cooking surface is fabricated. Claim 23 by incorporating the limitations of claims 19 and 20 merely includes the limitation that lateral groove to groove spacing is in the range of about 15 to 56 times the vertical distance from the ridge top to groove bottom, and the ridge to ridge spacing is in the range of 2.3 mm to 2.8 mm. Such profile can be fabricated by cutting/machining, etching, stamping and the like. If the surface is formed by cutting or machining the radius of curvature can be infinitesimal. The Applicant respectfully requests that the Examiner provide either further evidence or an affidavit under 37 CFR 1.104(d) (2) wherein the Examiner states such facts are within his personal knowledge, and any basis therefore supporting the allegation.

Further, Applicant is submitting the calculation in attached Exhibits 1 and 2, to show that Doyle et al. does not disclose a radius of 4 mm, but rather a radius of curvature of only 2.47 mm. This value for the radius of curvature, R, is derived in Exhibit 1 from the specifications description of the height of raised dots (0.19 mm in Doyle’s specification with the geometry of the dots in FIG. 5 (marked with the radius of

curvature, R in Exhibit 2).

The Examiner rejected claims 18 and 26 in view of Tsai. Although the Applicant believes that the rejection is not tenable, In light of the above arguments as the improper combination of either the Doyle or Welhouse reference with the Cheng reference, independent claims 12 and 19 have now been amended, adding the limitation that the article of cookware also comprise “ a fluropolymer coating that comprises a ceramic filler”, and should now overcome the Examiners rejection.

The Examiner rejected claims 14, 21 and 22 further in view of Doyle et al. Although the Applicant believes that the rejection is not tenable, In light of the above arguments as the improper combination of either the Doyle or Welhouse reference with the Cheng reference, independent claims 12 and 19 have now been amended, adding the limitation that the article of cookware also comprise “ a fluropolymer coating that comprises a ceramic filler”, and should now overcome the Examiners rejection.

The Applicant further submits that the new limitations in amended claims 12, 19 and 27 to “a fluropolymer coating that comprises a ceramic filler” is not an obvious modification. The Applicant discovered that prior shaped ridges and grooves having sharp edges yielded inferior product performance, notably adhesion problems and reduced durability of the non-stick coating. It was further discovered by the applicant that such inferior performance was caused by the re-alignment of the filler particles in the fluoropolymer coating at the sharp edges. The Applicant discovered that the total coating durability could be vastly improved by combining the smooth shaped corrugations in the underlying pan, with the proper pitch and height from peak to trough, with the fluropolymer coating containing the ceramic filler. This limitation finds support in the specification at paragraph [0022]

It is respectfully submitted that the amended claims 12 to 31 clearly and patentably distinguish over the prior art, since it is believed that the construction defined in these claims differs essentially and in an unobvious, highly advantageous manner from the constructions disclosed in the references. Applicant believes that combining the references discussed above and cited in prior office actions would not lead to the claimed

invention, in that the present invention does not merely employ the known substitution of equivalents but rather employs a new, non-obvious combination to accomplish the objectives set out in the present application.

As the Examiner has failed to supply requested Affidavits under 37 CFR 1.104(d) (2), the Applicant contends that the finality of the Office Action was improper, and hence respectfully that it be withdrawn, with the new claims be entered, examined and allowed. Should the Examiner disagree, the Applicant requests the entry of the amended claims to better place the application in condition for appeal.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully asked that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. Alternatively should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned.

Respectfully submitted:

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enclosure: Exhibit 1 and 2